

Comprehensive Solution: Lube & Seal

Lubricant and radial shaft seal material should be well tuned

The influence a lubricant has on the material of a radial shaft seal, especially at the sealing lip, must be taken into account already in the design stage. After all, incompatibility might lead to decomposition of the seal material, in which case no drive system will attain its full service life. Now help is available in the form of the "Lube & Seal" concept offered in cooperation by Freudenberg Simrit and Klüber Lubrication.

The way sealing ring and lubricant interact is of decisive importance both for the function and the life expectancy of any drive unit. To make it easier for the user to choose, Freudenberg Simrit and Klüber Lubrication have combined the know-how in their specific fields in the "Lube & Seal" concept, allowing them to offer comprehensive solutions with optimally tuned combinations of seals and lubricants from a single source. With "Lube & Seal", the reliability of machines and drive units can be considerably improved and their lifetime extended. Furthermore, design and R&D engineers have a constant contact person with whom to cooperate for the development of a lasting solution. Reliable radial sealing has a major influence on service life, machine availability, the need for maintenance as well as the quality image a machine supplier has with his customers. The sealing ring is expected to last for a long time even though it is subject to severe physical, tribological and also chemical stress.

A decisive factor for the durability of a seal is the combination of sealing material and the lubricant used, which has so far been paid little attention in the design of gears. Since 2004, DIN 51517 has been extended to include the interaction of these two chemical worlds. The specification of this DIN standard stipulates a compatibility test between the lubricant to be used and NBR 28 as a reference elastomer. Unfortunately this test configuration does not reflect real-life conditions as the elastomers used in practice are normally different from the one used in the test. For this reason, gear oils that have proven compatible in this DIN test are not always so in practice.

A radial shaft sealing ring works like a little pump transporting lubricant or gas to below the sealing edge and back to the oil reservoir. This ensures sufficient lubrication between shaft and sealing lip, preventing abrasion and wear. However, it works only well if the lubricant and the sealing lip elastomer are compatible. If they are not, decomposition or hardening of the sealing lip may be the consequence.

Comprehensive system from a single source offers reliability and longevity of drive components

To reduce friction and wear to a minimum, the radial shaft seal and the lubricant must form a functional unit. The lubricant should form a separating film in the bearing, the teeth and at the sealing lip. It should reduce friction and increase the gears' efficiency, improve the dissipation of heat and protect the components against corrosion.

For the design engineer to develop a drive unit that optimally fulfills its specific tasks, the Lube & Seal concept can offer him invaluable help by providing an accurately tuned and tested seal-lubricant system. In addition, the Lube & Seal team delivers comprehensive service for all aspects of the tribologically complex system that is a radial shaft seal, and both the seal and the lubricant are obtained from a single source.

The Lube & Seal experts regard the seal and its lubrication as an integral system. The goal of this approach is to minimise the number of failures in relation to the seal's service life, i.e. failures should not occur before the defined wear or age limit of the lubricant has been exceeded.

Ongoing analysis of the interplay between the sealing material and the lubricant ensures the user will enjoy a high degree of reliability and equipment longevity. Furthermore, this integral approach helps to reduce development times, resulting in competitive edge for the manufacturers of drive units or systems.

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Freudenberg Simrit

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A cost-saving concept

"Lube & Seal" is a comprehensive concept with which Simrit comprehensive offers the development engineer integral systems designed for optimised function. This entails a number of benefits:

- shorter development times
- cost savings in design and manufacture
- lubricant optimally tuned to sealing ring and drive system
- low friction and wear
- higher reliability due to defined wear limit
- longer service life of the whole system